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BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. IX.] New York, February, 1882, **[No. 2.**

On a Hybrid Oak near Keyport, N. J.

By N. L. Britton.

(Plates x, xi and xii.)

In the early part of September, 1881, Messrs. W. H. Rudkin and Wm. Bower, while botanizing between South Amboy and Keyport, New Jersey, noticed a number of oak-trees whose leaves and acorns seemed different from those of any species known to grow in the vicinity of New York, and which apparently indicated every form of outline and lobing between those of typical trees of *Quercus nigra*, L., and *Q. Phellos*, L., which grew in company with them.

Since the date of the discovery of the trees, two other excursions have been made to the locality by members of the Torrey Club, and the result has been a confirmation of the impression first formed, and all who have seen them are of the opinion that they are hybrid forms between the black-jack and willow-oaks, and, as such, have not been noticed in our botanical literature up to the present time, as far as I can ascertain.

The number of trees observed was about ten, of widely different ages, indicating either that the process of hybridization has been in progress at different times, or, that if it all took place the same season, some of the acorns have germinated sooner than others.

The outlines and modes of venation of the leaves of the new hybrid are exactly represented in the accompanying plates. These show the principal variations towards the unlobed or slightly lobed leaves of typical *Quercus nigra*. L., and the much-lobed leaves of what Dr. Engelmann regards as a juvenile, sterile state of the same tree, but which is often seen in large fruiting specimens—the *Q. ferruginea* of Michaux. These leaves vary in outline from lanceolate or oblong unlobed leaves (Figs. 2 and 6), not unlike those of *Q. imbricaria*, Michx., to those where a slight, obtuse lobe appears on one side (Fig. 3); or slight on one side and more pronounced on the other (Fig. 4); or well marked on both sides (Figs. 5 and 7); or obtuse on one side and acute and bristle-pointed on the other (Fig. 9); or acute and bristle-pointed on both sides (Fig. 10), to the leaves of *Q. nigra*, L. (Figs. 8 and 11). It appears as though the specimens reproduced on Plates x and xi were transitions towards the slightly lobed or unlobed *Q. nigra*, L., while the two lower figures on Plate xii indicate transitions towards the more lobed forms; and the figures have been grouped with regard to this fact. The petiole is also seen to vary, though not very prominently shown in the leaves figured, from very short in *Phellos* to a considerable length in *nigra*. The amount of pubescence on the lower surface of the leaves, very slight or absent in *Phellos*, varies on leaves of the hybrid to the heavy, rusty covering of *nigra*.

The acorns vary considerably. Those of *Phellos* are nearly globular, with a low, saucer-like cup (Fig. 1 in the cut); in *nigra* ovoid or oblong, with a top-shaped cup (Fig. 5). In the hybrid they vary on the different trees; the one represented in Fig. 2 came from the tree bearing the leaves figured 2 and 3 in Plate x; it is seen to be slightly longer than the acorn of *Phellos*, and to have a slightly deeper cup with broader scales. The acorn represented in Fig. 3 grew with leaves like those figured 4, 5, 6 and 7; this is much deeper-cupped and longer, with broader scales. The trees which bore leaves like those figured 9 and 10, had acorns like the one represented in Fig. 4 of the cut. This is short-ovoid in shape, with a very wide broad-scaled cup, and does not seem to be intermediate between those of the parents, but is peculiar to itself.

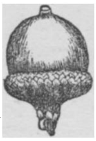
Fig. 1.

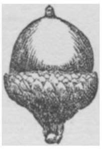
Fig. 2.

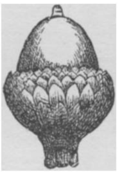
Fig. 3.

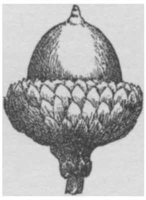
Fig. 4.

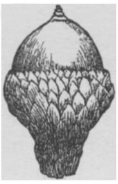
Fig. 5.

The primary venation, which is simply pinnate, with short veins in *Phellos*, and irregularly-pinnate, with veins of very unequal length in *nigra*, presents every variation between the two in the leaves of the hybrid.

The Plates do not represent, by any means, all the variations which were found; but are only intended to illustrate the most common forms which occur.

The bark of the hybrid trees is most nearly like that of *nigra*, being black and quite rough, though varying somewhat in the different trees.

I have thought it not improper to name this hybrid oak—probably the plainest of them all—after the gentleman who first discovered it, Mr. W. H. Rudkin.

In connection with this subject, I take the liberty of making the following extracts from Dr. Geo. Engelmann's paper on *" The Oaks of the United States," in order to enumerate the hybrids already noticed in this country. Dr. Engelmann says: "White oaks and black oaks are too distinct to be crossed. * * * Among the white oaks, hybrids seem to be much rarer than among black oaks. Of the former, I have thus far been able to trace but 3 forms only, which I take to be hybrids, and all of them point to *Q. alba* as one of the parents.

Q. alba x *macrocarpa* is sent by M. S. Bebb from Northern Illinois.

Q. alba x *stellata*. A specimen from the same careful observer must, I believe, be referred here.

Q. alba x *Prinus*. A single tree, now unfortunately destroyed, was observed by Dr. G. Vasey near Washington.

The hybrid black oaks are much more numerous or * * * more have thus far been noticed. * * * Our black oak hybrids are the following :

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* *Trans. St. Louis Acad. Sci.*, Vol. iii, Nos. 3 and 4.

Q. Catesbaei x *aquatica* ; *Q. sinuata*, Walt. It is quite probable that in the tree observed by Dr. Mellichamp, * * * near Bluffton, S. C., we meet with Walter's obscure and long ignored species.

Q. Catesbaei x *laurifolia*, a late discovery of Dr. Mellichamp, is found in the same neighborhood.

Q. imbricaria x *nigra* ; *Q. tridentata*, Eng. in Hb. A single tree, rather small * * * was found by me in the autumn of 1849 on the hills 6 miles east of St. Louis.

Q. imbricaria x *palustris* was observed by me a few years ago, 8 miles west of St. Louis.

Q. imbricaria x *coccinea* was first described and figured by Nuttall about thirty years ago under the name of *Q. Leana*. The original tree was discovered by Mr. T. G. Lea near Cincinnati, and is still in existence.

Q. ilicifolia x *coccinea*, Robbins, discovered by Dr. Robbins at Uxbridge, Mass., in 1855."

Quercus heterophylla, Michx., regarded by Dr. Engelmann as a hybrid between *Q. Phellos* and *coccinea*, or some other oak with deeply lobed leaves, is considered by Mr. I. C. Martindale,* who has given the matter much careful study, to be worthy of specific rank, and is excluded from the foregoing list.

New Species of Compositae chiefly Californian.

By Edward Lee Greene.

Viguiera Parishii.—Shrubby, much branched and scabrous-hispid ; leaves mostly opposite, an inch or two long, including the short petiole, ovate, acute, the margins with a few coarse triangular teeth ; flowering branches long and flexuose, nearly naked above, and each bearing a single head ; involucre short, its scales ovate-lanceolate ; rays about 10 ; receptacle convex ; bristle-like awns of the pappus about equalling the finely ciliate akenes, and deciduous ; the intervening scales apparently persistent, numerous and acute.

Collected at San Luis Rey, April, 1881, by the Messrs. Parish (No. 963).

Dr. Gray writes that he has the same from the Colorado Desert, collected by Mr. W. C. Wright.

Hemizonia (Hartmannia) Heermanni.—Near *H. virgata*, but densely short-hirsute and very viscid-glandular throughout ; stem 1–3 feet high, parted below the middle into many graceful wand-like, loosely racemose or racemose-paniculate branches ; cauline leaves an inch or more long, linear, entire, those of the sterile branchlets oblong-linear, 2–3 lines long and crowded, of the flowering ones still smaller, bract-like, ovate-oblong, scattered and more or less appressed, each tipped with a truncate gland which is nearly or quite sessile ; heads of medium size ; rays 5–8, broad, 3–4-toothed, bright yellow and showy ; disk-flowers 10–15, their corollas glandular ; fertile

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* Notes on the Bartram Oak, *Quercus heterophylla*, Michx., by Isaac C. Martindale, Camden, 1880.

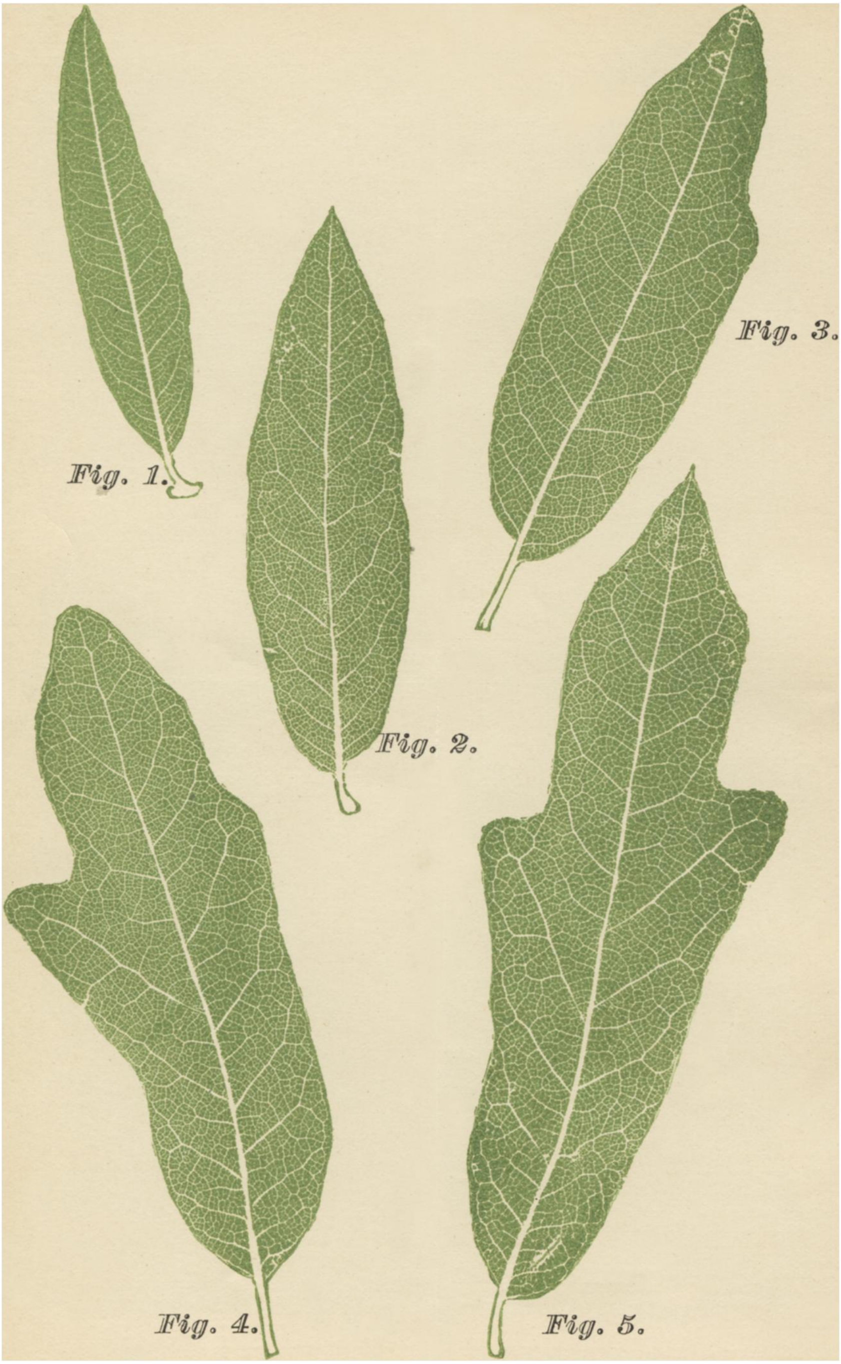


FIGURE 1.----QUERCUS PHELLOS, L.

FIGURES 2, 3, 4, 5.----Q. PHELLOS, L., X Q. NIGRA, L.,= Q. RUDKINI.

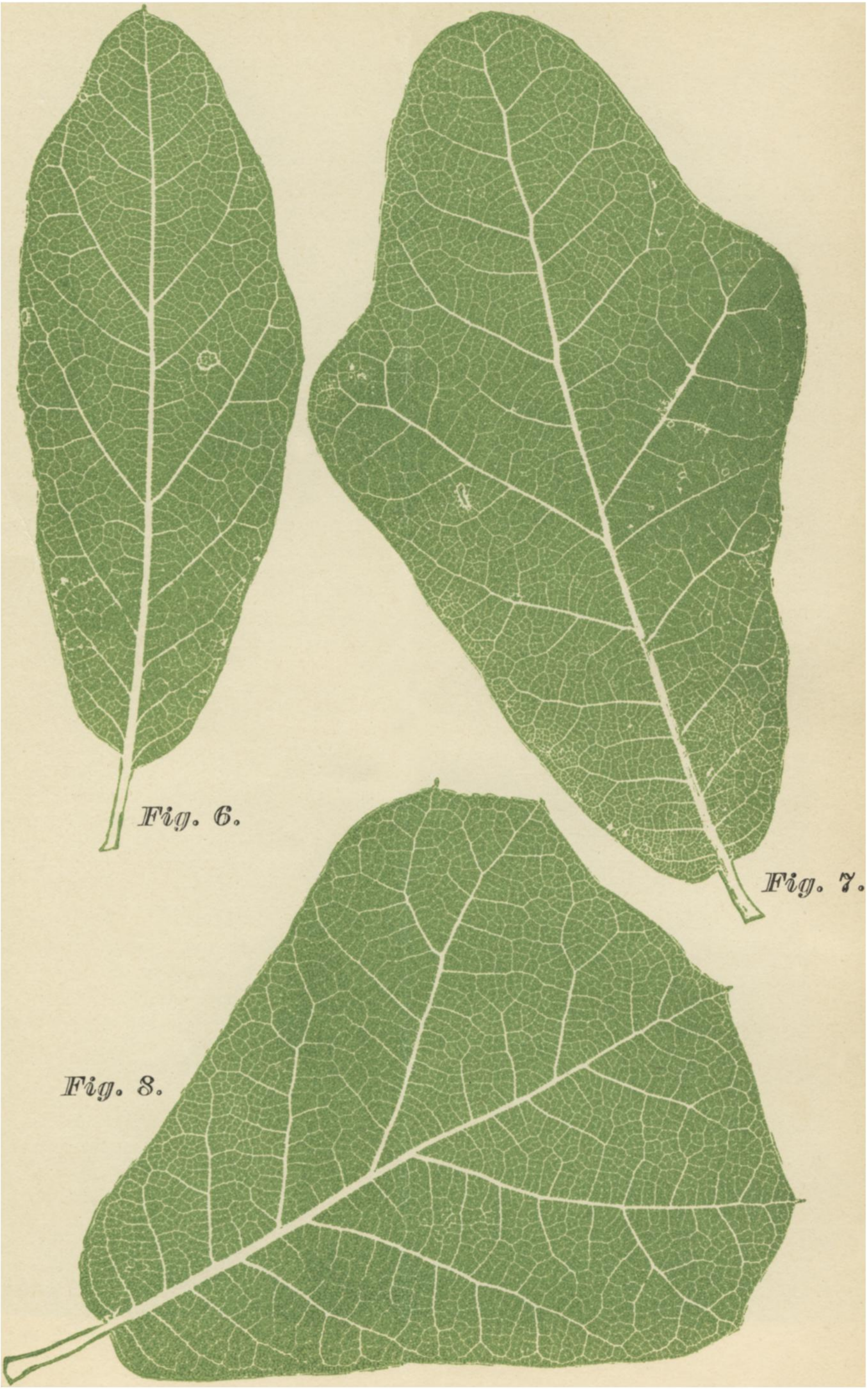
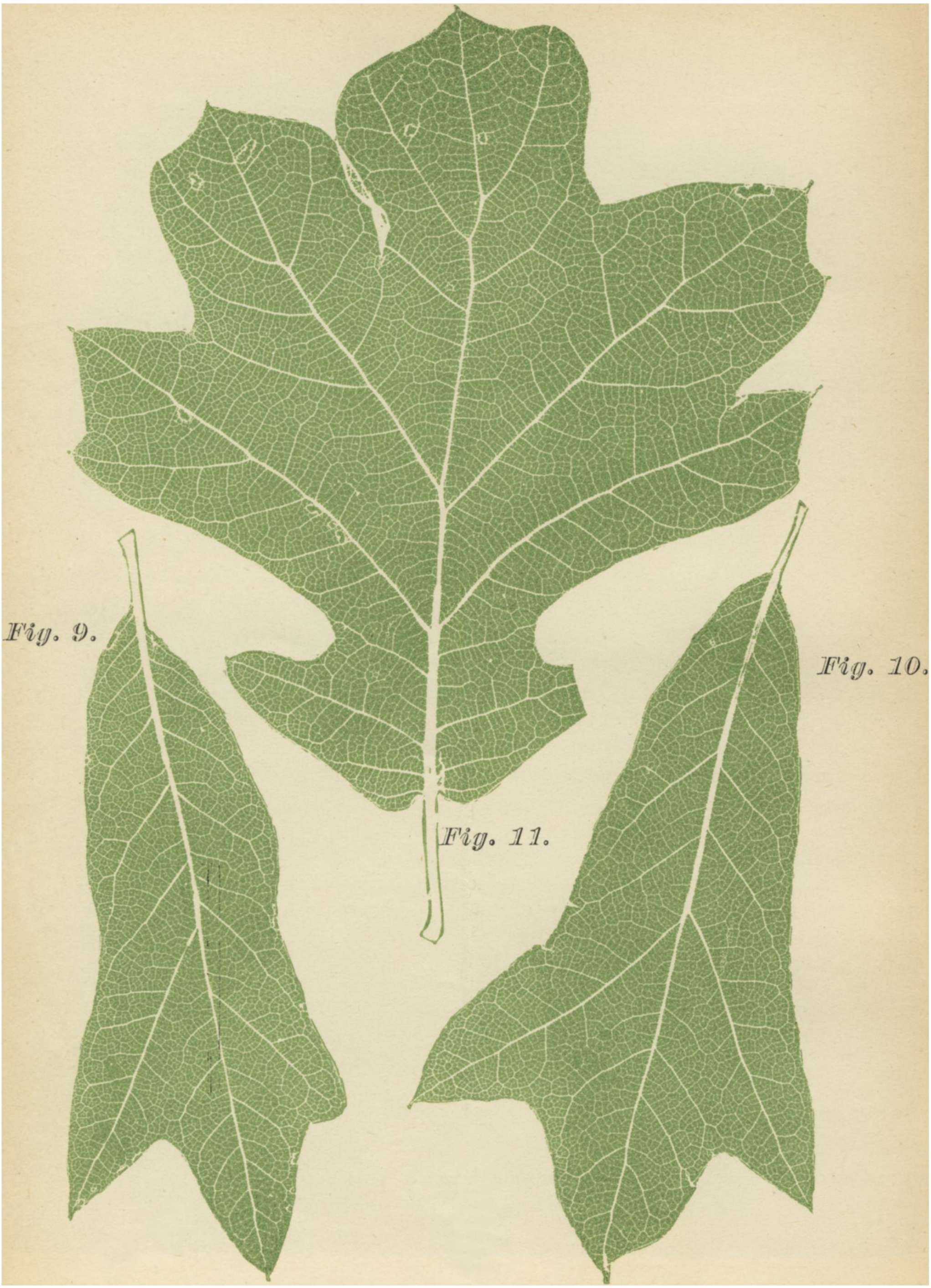


Fig. 6.

Fig. 7.

Fig. 8.

FIGURES 6, 7.----Q. PHELLOS, L., X Q. NIGRA, L.,= Q. RUDKINI.
FIGURE 8.------UNLOBED Q. NIGRA, L. (Q. FERRUGINEA, MICHX.)



Figures 9, 10.----Q. Phellos, L., X Q. nigra, L.,= Q. Rudkini.
Figure 11.------Lobed Q. nigra, L.